

H ASSEMBLY INSTRUCTIONS

AIRTEK® for Volvo Vehicles Single to Dual Height Control Valve Conversion Kit

SUBJECT: 60961-101 and 60961-102

LIT NO: 59310-026

DATE: January 2006

REVISION: A

INTRODUCTION

Prior to March 2005, some Volvo vehicle configurations required dual height control valves; as of March 2005 all of Volvo vehicles will be equipped with dual height control valves.

Hendrickson has Dual Height Control Valve Conversion Kits available to convert from a single height control valve to dual height control valves, kit numbers:

- 60961-101 (12/12.5K capacity)
- 60961-102 (13.2K/14.6K capacity).

DUAL HCV CONVERSION INSTRUCTIONS

DISASSEMBLY

1. Place vehicle on level floor.
2. Chock the wheels.
3. Remove the air from the air system by disconnecting the height control valve linkage at the rubber grommet and allowing the lever to drop. This will exhaust air from the system.

WARNING

IF THE AIR SPRING IS TO BE RE-INSTALLED; INSPECT LOCK-TABS FOR DAMAGE OR CRACKS PRIOR TO RE-INSTALLATION. CARE MUST BE TAKEN TO REMOVE DIRT AND DEBRIS FROM THE PUSH-TO-CONNECT FITTING. FAILURE TO DO SO COULD RESULT IN THE PUSH-TO-CONNECT-FITTING FAILING TO SEAL WITH THE AIR LINE.

DANGER

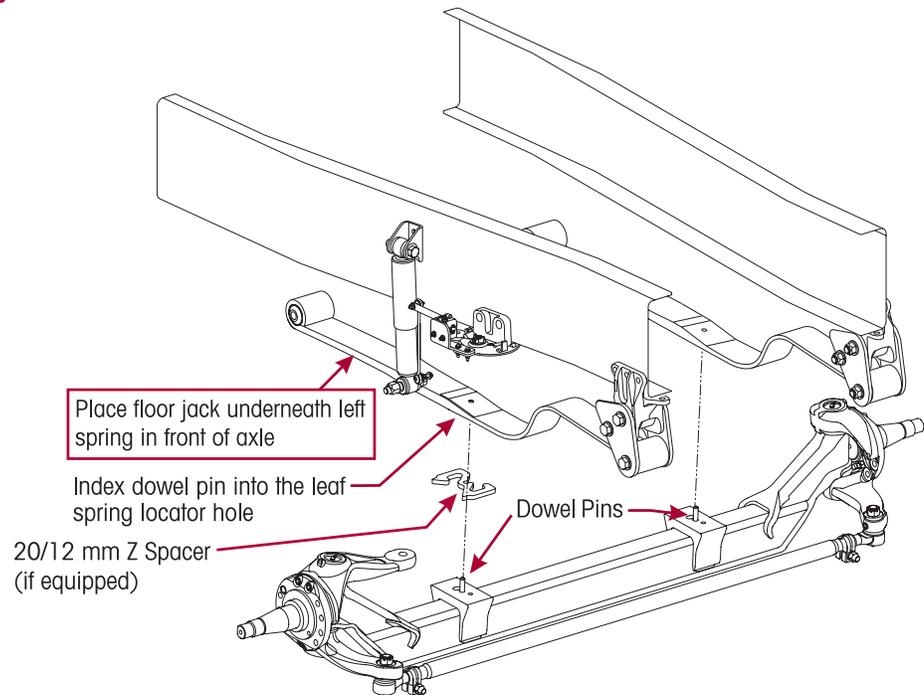
AIR SPRING ASSEMBLIES MUST BE DEFLATED PRIOR TO LOOSENING ANY CLAMP GROUP HARDWARE. UNRESTRICTED AIR SPRING ASSEMBLIES CAN VIOLENTLY SHIFT. DO NOT INFLATE AIR SPRING ASSEMBLIES WHEN THEY ARE UNRESTRICTED. AIR SPRING ASSEMBLIES MUST BE RESTRICTED BY SUSPENSION OR OTHER ADEQUATE STRUCTURE. DO NOT INFLATE BEYOND PRESSURES RECOMMENDED BY AIR SPRING MANUFACTURER, CONTACT HENDRICKSON TECHNICAL SERVICES FOR DETAILS. IMPROPER USE OR OVER INFLATION MAY CAUSE AIR SPRING ASSEMBLIES TO BURST, CAUSING PROPERTY DAMAGE AND/OR SEVERE PERSONAL INJURY.

4. Disconnect the delivery air line from the right air spring.

ASSEMBLY

1. Install the new right side height control valve assembly on the right side upper air spring bracket and connect the link to the bracket on the top pad.
2. It is important to identify and mark each existing air line prior to removal of the air line for proper installation of the dual height control valves. The air line connections to the proper ports/supply during reassembly are essential to the conversion process.
3. Inspect the air line removed from the right air spring, trim the end square if necessary. Insert the air line in the supply port of the new height control valve.
4. Install a new air line from the right height control valve delivery port into the right air spring fitting. Cut the new line to length and ensure that the ends of the line are cut square. Make sure that air lines are fully seated in the fittings.
5. Remove the air lines from the existing left side height control valve.
6. Remove the existing left side height control valve assembly and discard.
7. Install the new left side height control valve assembly on the left side upper air spring mounting bracket and connect the link to the bracket on the top pad.
8. Install a new air line from the left height control valve delivery port and into the left air spring fitting. Cut the new line to length and ensure that the ends of the line are cut square. Make sure that air lines are fully seated in the fittings. It must be determined prior to cutting and installing the air line if the vehicle is equipped with a suspension air pressure gauge. It is required that a T-fitting be installed in the middle of the line to read the suspension air pressure.
9. It is necessary to acquire access to the air lines inside the left frame rail. Cut plastic ties as necessary to gain access to route air lines inside the frame rail.
10. The supply line from tank will continue to be the supply line for both height control valves. It will be necessary to cut the supply line where it is routed through the left frame rail hole. Install a T-fitting at this location.
11. Cut to length and install an air line from the T-fitting to the left height control valve supply port.
12. Trace the former right air spring delivery line (which is now the right height control valve supply line) and find the T-fitting that has the suspension dash air gauge line installed in it.
13. Remove the dash gauge air line and install it in the T-fitting that was installed in the left air spring delivery line.
14. Remove the T-fitting from the former right air spring delivery line and install a union. Cut a new air line to length from the union to the system air supply T-fitting.
15. Install the air line. Install new plastic lines and secure all air lines inside the left frame rail. This should complete the installation and plumbing of the height control valves. See Dual Height Control Valve Plumbing Diagram (Figure 9).
16. Loosen the right side clamp group to minimize axle shift.
17. Loosen and remove the left clamp group fasteners.
18. Install a jack underneath the left spring in front of the axle. Position the jack far enough away from the axle to allow enough clearance for removal of the 20 or 12 mm spacer. (If equipped) See Figure 1.

19. Raise the jack and lift the left leaf spring off the axle seat.
20. Remove and discard 20 or 12 mm spacer (if equipped).
21. Remove the left dowel pin to shorten the dowel pin to the length of the thickness of the removed spacer (20 or 12 mm spacer).
22. Insert the shortened left dowel pin.
23. Slowly lower the jack engaging the dowel pin into the leaf spring.
24. Install new fasteners on the left clamp group.

Figure 1

25. Ensure that the clamp group is properly aligned and the hex bolts are seated in the top spring pad, and the bottom axle wrap is centered on the top axle wrap. See Figures 2 and 3.

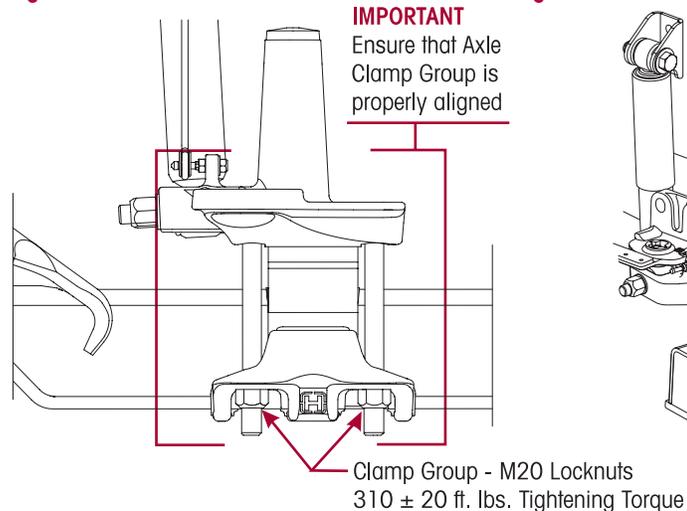
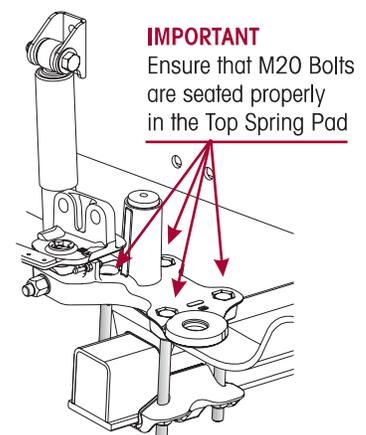
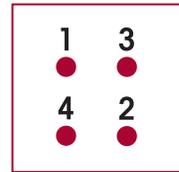
Figure 2**Figure 3**

Figure 4



26. Tighten the M20 clamp group locknuts evenly to  310 ± 20 foot pounds (420 Nm) torque in the proper sequence, see Figure 4.
27. Air up system.
28. Install the height control valve linkage(s) and inflate the suspension to normal operating pressure.
29. Remove chocks from wheels.
30. Verify proper ride height.

DUAL RIDE HEIGHT INSPECTION PROCEDURE

NOTE

The reference ride height measurements are different on the 12,000/12,500 and 13,200/14,600 pound capacity suspensions. Verify suspension capacity, and ensure the proper ride height gauge is used.

AIRTEK HEIGHT GAUGE

- Lit No. 45745-170 — 12,000 and 12,500 pound capacity
 - Lit No. 45745-195 — 13,200 and 14,600 pound capacity
1. Use a work bay with a level floor. Drive the vehicle slowly, straight ahead. Try to slacken or loosen the suspension as the vehicle is positioned. End with all the wheels positioned straight ahead. Try to roll to a stop without the brakes being applied.
 2. Chock drive wheels. Do not set parking brake.



DANGER

AIR SPRING ASSEMBLIES MUST BE DEFLATED PRIOR TO LOOSENING ANY CLAMP GROUP HARDWARE. UNRESTRICTED AIR SPRING ASSEMBLIES CAN VIOLENTLY SHIFT. DO NOT INFLATE AIR SPRING ASSEMBLIES WHEN THEY ARE UNRESTRICTED. AIR SPRING ASSEMBLIES MUST BE RESTRICTED BY SUSPENSION OR OTHER ADEQUATE STRUCTURE. DO NOT INFLATE BEYOND PRESSURES RECOMMENDED BY AIR SPRING MANUFACTURER, CONTACT HENDRICKSON TECHNICAL SERVICES FOR DETAILS. IMPROPER USE OR OVER INFLATION MAY CAUSE AIR SPRING ASSEMBLIES TO BURST, CAUSING PROPERTY DAMAGE AND/OR SEVERE PERSONAL INJURY.

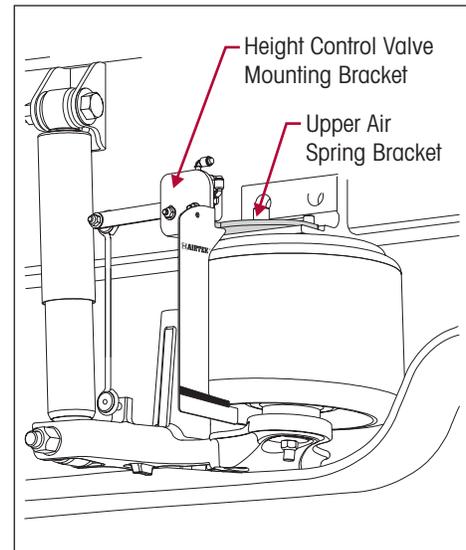
3. Cycle the air system. Detach the upper rubber grommet(s) of the height control valve linkage(s) from the upper stud and exhaust the suspension system air by lowering the height control valve linkage arm.
4. Re-attach the upper grommet of the height control valve linkage onto the upper stud to fill the suspension system with air. Wait until the airflow to front air springs has stopped.



Figure 5
Shown for 12K/12.5K pound capacity



Figure 6
Shown for 13.2K/14.6K pound capacity



5. a) **12K/12.5K Capacity**

Hold the 45745-170 gauge vertically. See Figure 5. Place the gauge so that the upper notch feature is placed between the height control valve mounting bracket bolts and is flush against the bottom of the air spring bracket.

b) **13.2K/14.6K Capacity**

Hold the 45745-195 gauge upper notch feature against the outboard side of the height control valve mounting bracket and to ensure it is flush against the bottom of the upper air spring bracket. See Figure 6.

6. The air spring piston flange edge should contact the lower region marked "ACCEPTABLE."
7. If the air spring piston flange edge contacts the "BELOW SPEC" region, the ride height is set too low and requires adjustment. See Figure 5. If the air spring piston flange contacts the "ABOVE SPEC" region the ride height is set too high and requires adjustment.

If a gauge is not available, measure the suspension reference ride height on the front axle (air spring height). Measurement can be taken from the bottom of the upper air spring bracket to the bottom of the air spring piston flange.

- 12,000 and 12,500 pound capacity $7\frac{7}{8}'' \pm \frac{1}{8}''$
- 13,200 and 14,600 pound capacity $8\frac{1}{8}'' \pm \frac{1}{8}''$

ADJUSTMENT

1. Verify that the air system is at full operating pressure.

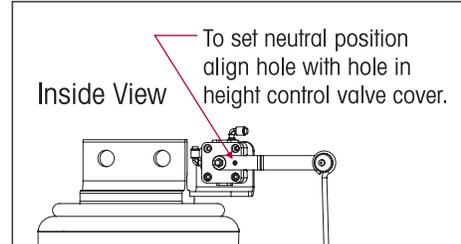
SERVICE HINT

It is very important that the leveling valve be cycled completely before and after any ride height adjustments. Cycling of the leveling valve will help make the adjustment more accurate.

2. See Air Spring Safety Notice on front page prior to deflating or inflating the suspension system. Cycle the air system. Detach the upper rubber grommet(s) of the height control valve linkage(s) from the upper stud and exhaust the suspension system air by lowering the height control valve linkage arm.

3. Refill the suspension by raising the height control valve arm(s) by hand, so that the air springs are above the proper ride height.
4. Lower the leveling valve arm(s) to exhaust the air system until the suspension is at the proper ride height as measured on the correct height gauge.

Figure 7



5. Use a 1/8" wooden dowel rod (golf tee) to set the neutral position for the height control valve(s) by aligning the hole in the leveling arm(s) with the hole in the height control valve cover, as shown in Figure 7. DO NOT use a metal rod or nail as this may cause damage to the height control valve.

NOTE

Hendrickson recommends the following be performed during any type of ride height adjustment to help prevent socket head cap screws from loosening from the height control valve housing, and any subsequent air leaks from the height control valve.

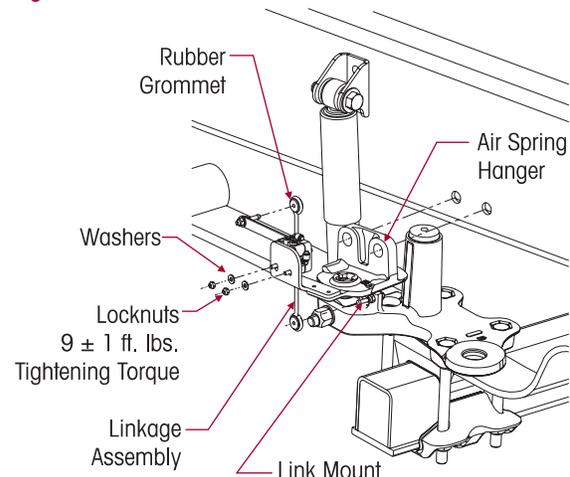
Prior to adjusting the height control valve, clean the threads of the mounting fasteners of any debris and corrosion.

NOTE

The above procedure should also be performed in the event an air leak is detected in the height control valve. If air continues to leak after the socket head cap screws have been properly re-tightened, the height control valve should be replaced.

6. Adjust the height control valve by loosening the mounting locknuts and pivoting the valve body about the mounting bolt so the height control valve leveling arm stud inserts directly into the center of the hole on the rubber grommet(s) at the proper height. Check the rubber grommet(s) for any tearing or damage, replace as necessary.
7. Facing the air spring from the outboard side for the left side of the vehicle, pivot the valve body counter clockwise to increase the ride height and clockwise to decrease the ride height. For the right side of the vehicle, pivot the valve body clockwise to increase the ride height and counter clockwise to decrease the ride height.
8. Connect the height control valve arm(s) to the rubber grommet(s).

Figure 8



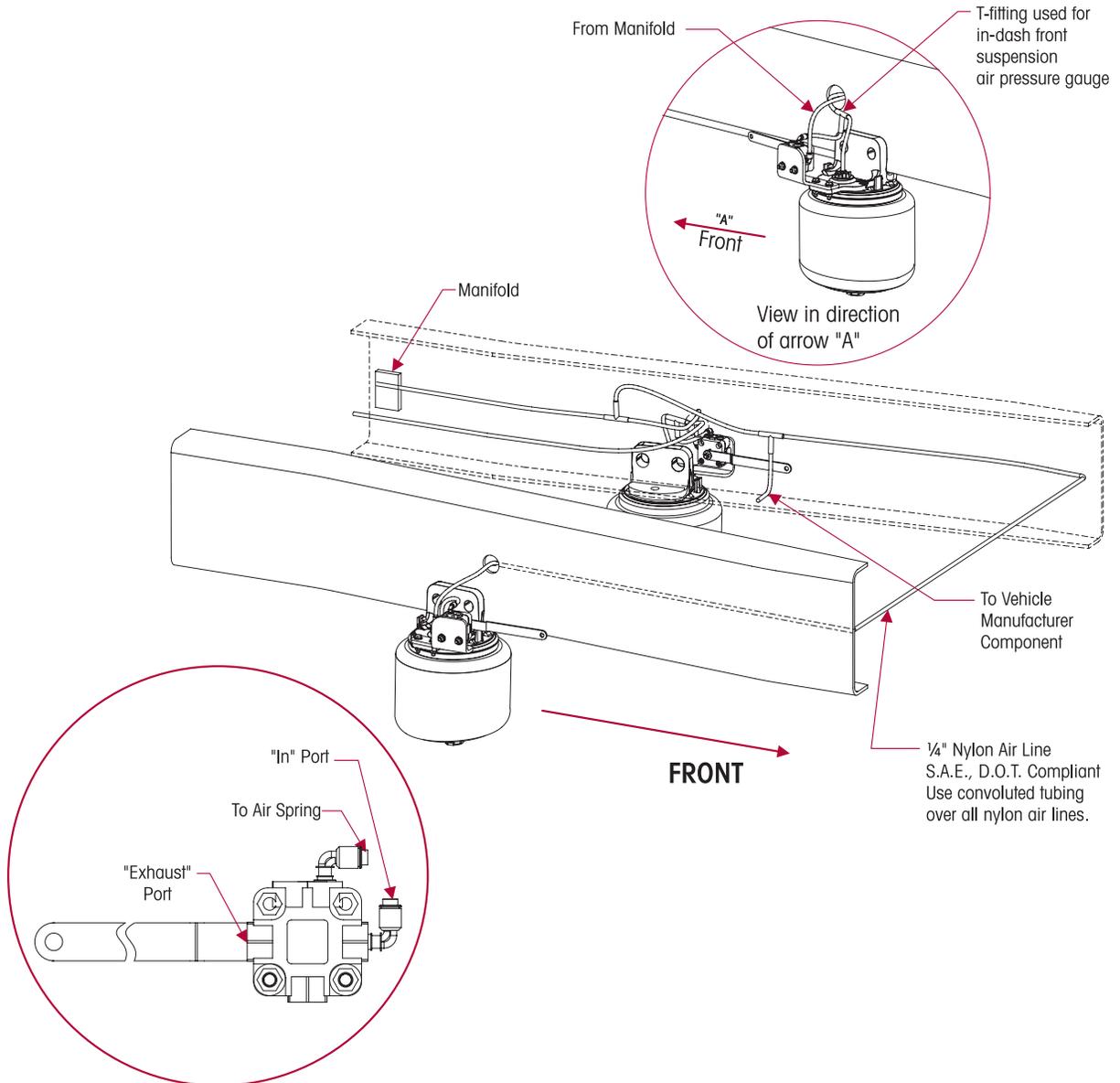
9. Tighten the mounting locknuts 9 ± 1 foot pounds torque after the adjustment is made. See Figure 8. Install a 5 mm allen wrench in the bottom socket head cap screws to prevent the screws from turning while re-tightening the locknuts. Remove the dowel from the height control valve(s).
10. Cycle the height control valve leveling arm(s) as stated in step number 2.



11. Recheck the ride height on both sides of the vehicle.
12. Repeat steps 2 through 10 until the ride height is within specification.

When replacing or installing nylon air line tubing into the quick-connect fittings it is critical that the end of the air line is cut square. Improper cut of the end of the air line tubing can cause the air line to seat improperly in the quick connect fitting causing air leakage.

Figure 9



www.hendrickson-intl.com



Truck Suspension Systems
800 South Frontage Road
Woodridge, IL 60517-4904 USA

630.910.2800
Fax 630.910.2899